

Planning Formative Assessment



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MontCAS

Module 4

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Formative Assessment Modules

- Module 1: Overview of Formative Assessment
- Module 2: Assessment Systems
- Module 3: Learning Progressions and Learning Goals
- **Module 4: Planning Formative Assessment**
- Module 5: Differentiating Instruction
- Module 6: Feedback
- Module 7: Student involvement
- Module 8: Changes in Practice

Module 4

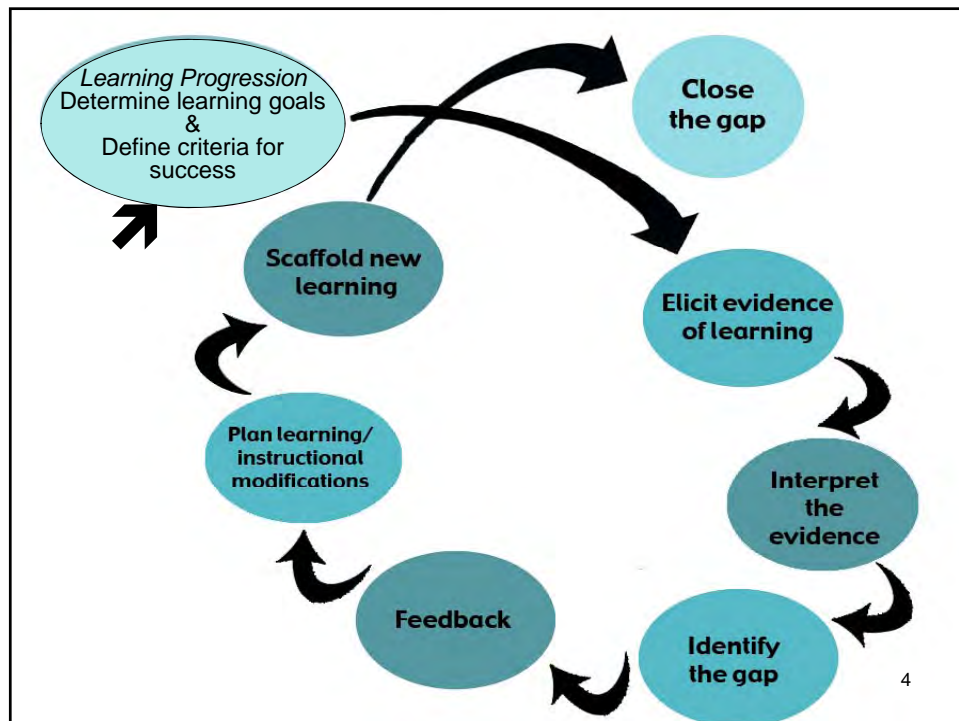
Learning Goal:

- *Gain an understanding of assessment quality as it applies to formative assessment*
- *Learn how to plan formative assessment strategies as part of instruction*

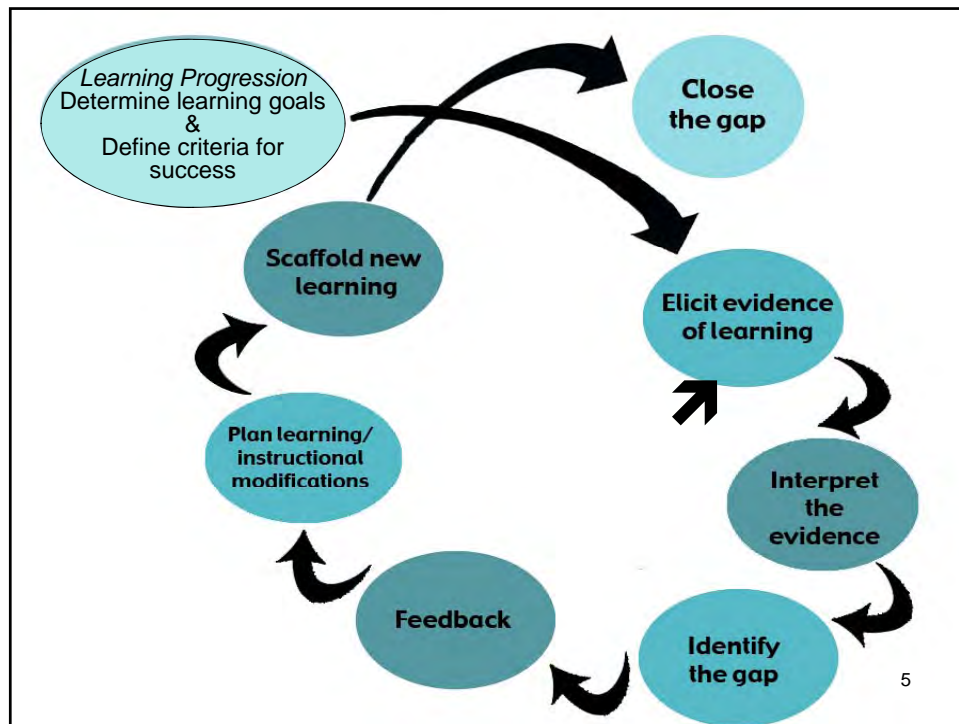
Success Criteria:

- *I can explain (to a colleague) the criteria for determining assessment quality in formative assessment*
- *I can evaluate the quality of formative assessment strategies*
- *I can select appropriate formative assessment strategies to elicit evidence of learning during a lesson*

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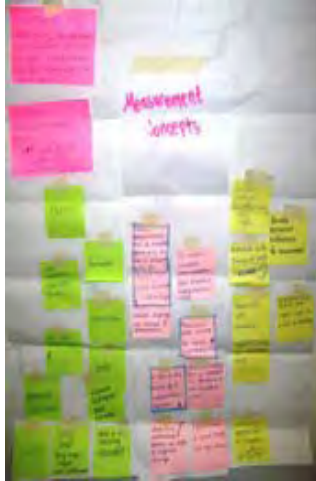
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Overview

- ✓ Reprise of Learning Progressions
- ✓ Other Questions
- ✓ Poll
- ✓ Eliciting Evidence of Learning
- ✓ Quality in Formative Assessment
- ✓ Evaluating Quality of Formative Assessment Strategies
- ✓ Poll

Learning Progression



- Select tools and units (customary and metric) appropriate for the length measured
- Use a ruler to measure to the nearest standard unit (whole, $\frac{1}{2}$ and $\frac{1}{4}$ inches, whole feet, whole yards, whole centimeters, and whole meters)
- Know and understand equivalent standard units of length: 12 inches = 1 foot 3 feet = 1 yard

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Learning Progression

- Use effective reading strategies to achieve their purposes in reading
- Use a variety of strategies and word recognition skills, including rereading, finding context clues, applying knowledge of letter-sound relationships, and analyzing word structures

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Learning Progression

District Leader

We have done backwards design planning in our district for many years but this process gave us the missing piece. Focusing on the important building blocks is what we needed. We can see what we need to teach and to assess.

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Montana Standards

Science Content Standard 2.

Students, through the inquiry process, demonstrate the knowledge of properties, forms, changes and interactions of physical and chemical systems.

Benchmark at the End of Grade 4

Model and explain that matter exists as solids, liquids, and gases and can change from one form to another

Essential Learning Expectation

Identify liquids, solids, and gases.

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Essential Learning: Identify liquids, solids, and gases

Existence of matter and diversity of materials

- Objects are made of specific materials
- There are different kinds of materials
- The same kind of object can be made of different materials
- Objects are made of matter that takes up space and has weight
- Solids, liquids and gases share these general properties
- There can be invisible pieces of matter

Objects have properties that can be measured and explained

- Objects have certain properties – weight, length, area and volume – that can be described compared and measured (K-2 only preliminary exploration)
- Weight is an additive property of objects that can be measured
- Volume is an additive property of objects that can be measured
- The weight of an object is a function of its volume and the matter it is made out of

Material kinds have properties that can be measured and explained

- The properties of materials can be described and classified (K-2 – observable properties only)
- Materials have characteristic properties that are independent of the size of the sample (extends knowledge to density, flammability and conductivity)

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Poll: True or False?

- ☐ Formative assessment is always spontaneous
- ☐ There is only one way to elicit evidence of learning from formative assessment
- ☐ The idea of validity only applies to large-scale tests
- ☐ Formative assessment tools and strategies must be aligned to the learning goal(s)
- ☐ Teachers need to give students multiple opportunities to show where they are in their learning
- ☐ Consequential validity is an important consideration in formative assessment
- ☐ Formative assessment is integrated into instruction

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Eliciting Evidence of Learning

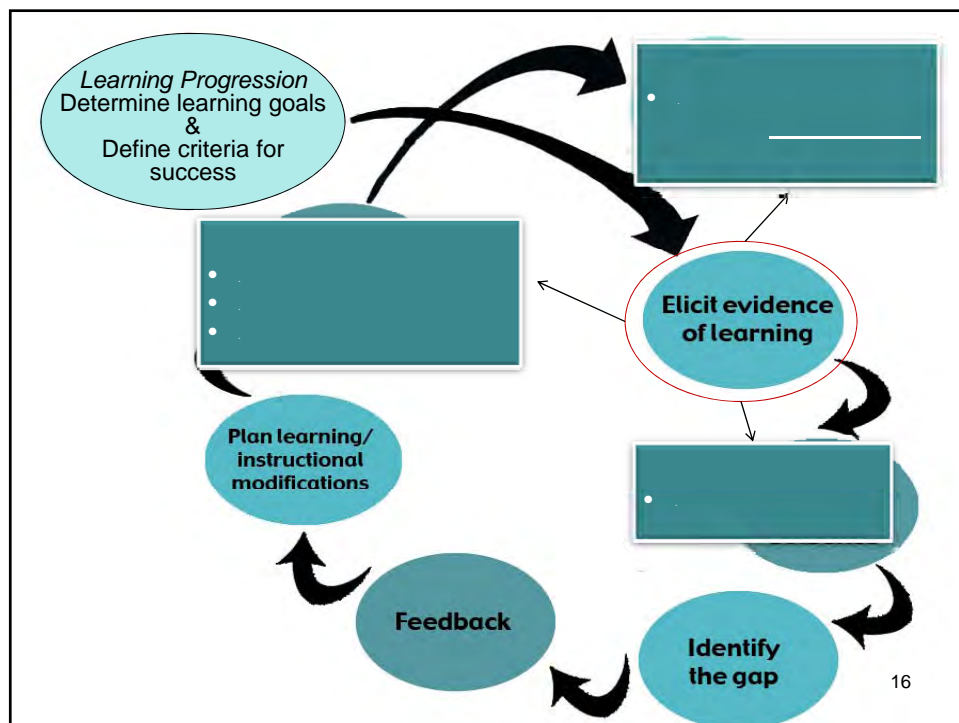
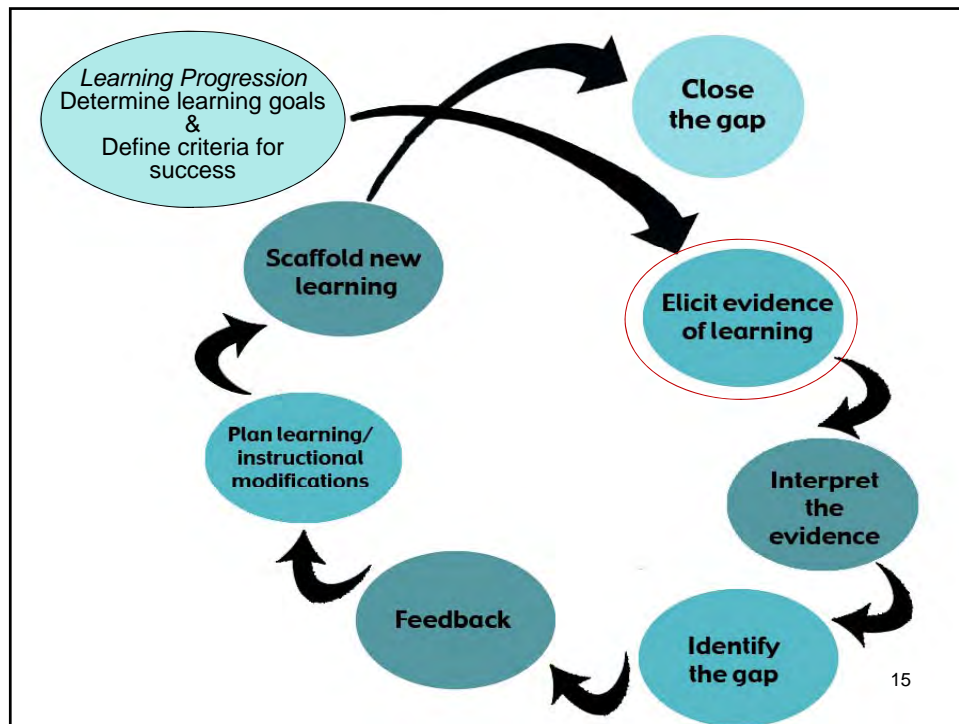
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Guiding Questions



- Where is the student going? (What are the goals?)
- Where is the student now? (What progress is being made toward the goal?)
- Where to next? (What activities need to be undertaken to make better progress?)

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Eliciting Evidence: No Single Way

- ✓ Questioning
- ✓ Discussion (student/student - teacher/student)
- ✓ Observation (watching and listening)
- ✓ Tasks (representations, explanations, problem solving strategies)
- ✓ Mid-lesson checks (white boards, ABCD cards, clickers)
- ✓ Exit cards
- ✓ Notes to teacher
- ✓ Curriculum-embedded assessments

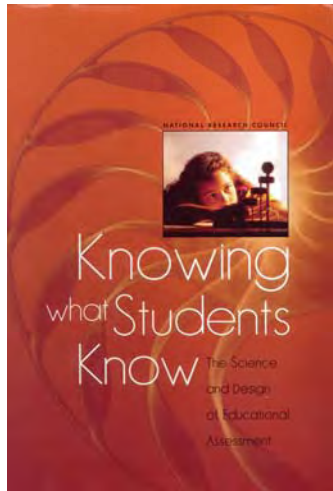
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Interpreting Evidence

- What does my evidence tell me about the students' current learning status?
- Is there a gap between my students' current learning status and the desired goal? What is it? Can I determine that from the evidence I have or do I need more evidence?
- Are my students on track to meeting the success criteria/have they met the success criteria?

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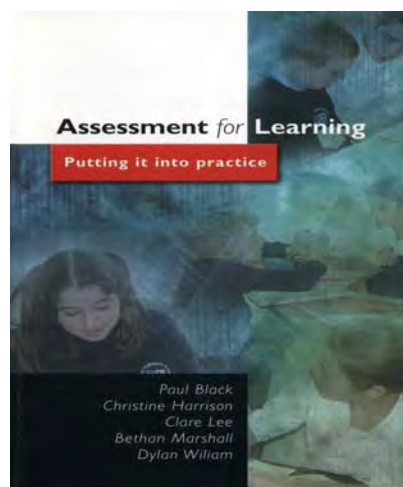
NRC, 2001



“...good formative assessment requires radical changes in the way students are encouraged to express their ideas (p.227).”

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Black et al., 2004



“More effort has to be spent in framing questions that are worth asking: that is questions which explore issues that are critical to the development of students’ understanding.” (p.42)

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Questions

- How can we be sure that ...?
- What is the same and what is different about...?
- Why do _, _, _ all give the same answer?
- How do you...?
- How would you explain...?
- Why do you think that...?

QCA, 2001

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Deduce, infer or interpret

- Look at the text and find ...
- Do you think ...?
- Find two examples to support your point of view.
- What was – thinking as he ...?
- How do you know?
- In the light of what you know now, why do you think he felt so angry?

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Structure of Texts

- Look at the way the sentences are organized. Why has the writer used these repetitive structures?
- Look at the way the poem is organized. Which words signpost change? What effect does change have?
- You've told me that the writer has started the passage with a question to make it more interesting. But how does this make the reader want to read on?

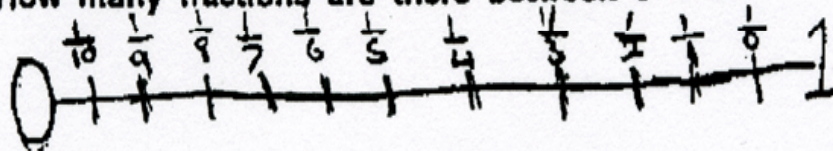
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Assessing Reading/Type of Evidence

- ✓ Questioning
- ✓ Reading logs
- ✓ Creative responses (additional chapters, alternative endings)
- ✓ Listening to read aloud
- ✓ Formal essay
- ✓ Oral presentation
- ✓ Extended conversations

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How many fractions are there between 0 and 1?



There are 10 fractions

Heritage & Niemi, 2006

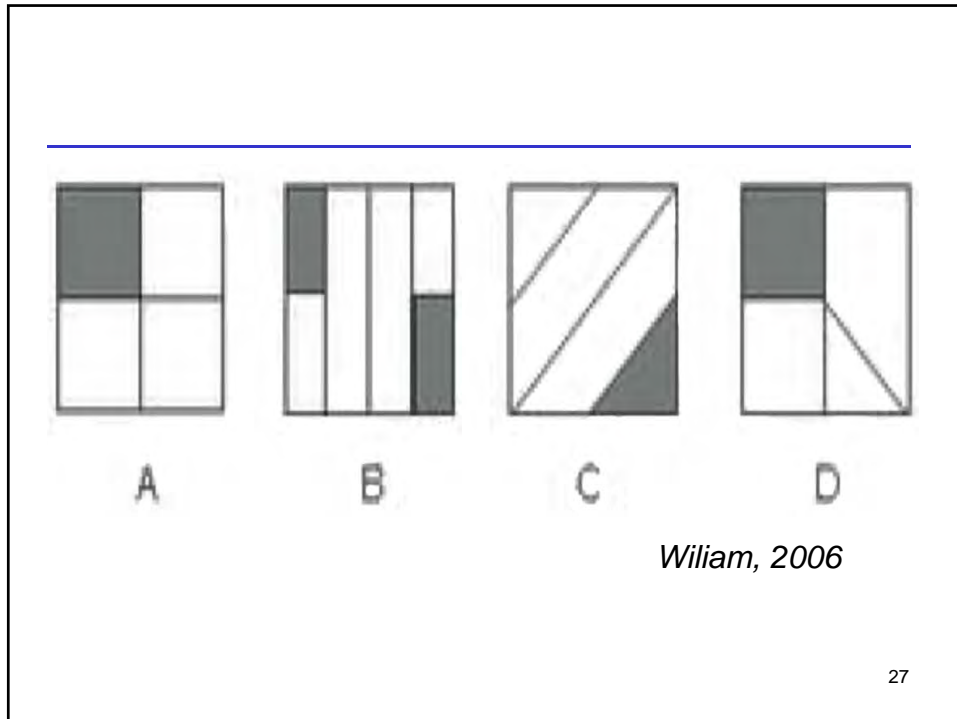
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How many fractions are there between 0 and 1?

Infinity, because 1 whole can be broken into as many pieces as you like, you can use any number. But as you keep dividing it, it will go on forever, there is no other way to say it except infinity. There is no last number.

Heritage & Niemi, 2006

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Questioning

Can you simplify $2a + 3b$?

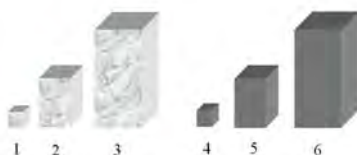
If you can, explain why.

If you cannot, explain why.

Discuss in your groups and report back

(William, 1999)

You have six blocks. Blocks 1, 2 and 3 are made of one material, while blocks 4, 5 and 6 are made of another material.



The density of blocks 1, 2 and 3 is 0.91 g/cm^3 , while the density of blocks 4, 5, 6 is 1.2 g/cm^3 .

For each block, predict whether it will sink, float or subsurface float in water. Give your reasons for your predictions.

Block	Circle Prediction	Reasons for your predictions
1	Sink Float Subsurface Float	
2	Sink Float Subsurface Float	
3	Sink Float Subsurface Float	
4	Sink Float Subsurface Float	
5	Sink Float Subsurface Float	
6	Sink Float Subsurface Float	

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Block	Block Sank or Floated Subsurface Floated?	Your prediction correct? (Circle)	Explain what you observed and why it happened.
1		Yes or No	
2		Yes or No	
3		Yes or No	
4		Yes or No	
5		Yes or No	
6		Yes or No	

Classroom Discussion

- Collect student predictions before observation
- Have student discuss in small group and commit to an explanation
- Carry out observation
- Have student reconcile responses

Observe & Explain

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Formative Assessment Techniques

- Increase wait time
- No hands up
- Talking partner discussions
- Students quickly jot down thoughts
- Traffic lights

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Planned Along with Instruction

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Component	Criteria
Tool Alignment with Learning Goals and Success Criteria	There is alignment between the learning goals, success criteria and the assessment tools you have selected.
Appropriate to Purpose	The evidence generated provides sufficient detail to enable the teacher to make instructional adjustments and provide feedback to move student learning forward.
Range of Student Responses	Students will be at different points in relation to how they are moving forward to meet the learning goal, therefore, the formative assessment tool should enable the students to show where they are in their learning.
Strategic Placement	Formative assessment tools are strategically placed in the lesson or series of lessons to provide information to keep learning moving forward toward the learning goal.
Multiple Opportunities and Variety of Formats	Students are assessed in multiple ways, using a variety of approaches (assessment formats) to show what they know and where they are in their learning.

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Essential Learning: Identify liquids, solids, and gases

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Learning Goal	Success Criteria	Formative Assessment
Make a connection between changing shapes of a liquid and its volume	<p>I can explain what happens to a liquid when it is poured into different containers</p> <p>I can explain why this happens</p> <p>I can describe what happens to the volume of the liquid</p>	<p>In your groups, make a prediction of what will happen to the liquid in container A when you pour it into the 4 different containers. Explain the reasons for your predictions (Share out and discuss).</p> <p>Describe what happens to the liquid when you pour it into the containers. Why do you think this happens?</p> <p>Write a conclusion about the volume of the liquid.</p>

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Formative Assessment in the Classroom: Sharon Pernisi



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Formative Assessment in the Classroom: Sharon Pernisi

Math Learning Goal	Success Criteria
Understand the structure of a coordinate grid	I can talk and write about plotting points on a coordinate grid using correct vocabulary
Relate the process of plotting points to the structure of a coordinate grid	I can plot and label points in each quadrant on a coordinate grid
	I can create rule about coordinates of each quadrant

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Formative Assessment in the Classroom: Sharon Pernisi

What are the key misconceptions that you expect students may have about this topic?

- Students may have a procedural graphing misconception-(y,x)
- Plot points in spaces rather than intersections
- Count intervals on lines rather than x or y axes

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Formative Assessment in the Classroom: Sharon Pernisi

How I will gather evidence of learning in this lesson?

Start of lesson:	Middle of lesson:	End of lesson:
Vocab Check: Whip around	Walk coordinates to label each location on large graph. Large group (SC2).	Generalize quadrant locations for set of coordinates verbally and in writing-cooperative groups (SC3)
What comes to mind when you think of coordinate graphing?	Describe the process verbally using vocabulary (SC1).	Chart created rules for each quadrant & gallery walk (SC3).
Look for target vocab- Origin, x-axis, y-axis, coordinates, quadrant	Plot and label points in 4 quadrants individually-design "Robertsville" (SC 1,2).	Reflection-self assessment of SC

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Formative Assessment in the Classroom: Sharon Pernisi

Key discussion questions that I will pose to students:

- Start of Lesson:* Are we in agreement with these definitions? How might we make definitions more clear? Are any big ideas missing? How might some of these terms go together?
- Middle of Lesson:* Where should you start? How would you label this point? Are we in agreement? Tell me your thinking. How do you know you've plotted this point correctly?
- End of Lesson:* What are you noticing about all the coordinates in this quadrant? How are they alike? How might you develop a rule for all the coordinates in this quadrant? How might you organize the coordinates in quadrant 1 so you can analyze them? (a list, chart, table...)

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Formative Assessment in the Classroom: Sharon Pernisi

When in the lesson will I offer feedback to students?

Opportunities for feedback: during vocabulary check (accuracy), graphing procedure while walking graph, during individual graphing, feedback from peers on post-its during gallery walk

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Formative Assessment in the Classroom: Sharon Pernisi

How will I encourage students to assess their own learning?

- Students will match points that are “walked” on coordinate grid with the points they plot on their individual graphs.
- Questioning while individually plotting
- Students will complete a reflection exit-ticket that assigns a rubric to the lesson SC

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Formative Assessment in the Classroom: Sharon Pernisi

Additional Notes

- LG & SC will be shared after initial vocabulary activity. Exit ticket will involve students in self-assessment against SC
- Whip around- watch for target vocabulary-if it does not come out of the whip around more direct vocab instruction may be needed before moving on.
- Some students may be conceptually ready to make generalization-they may need more experience with the structure (concrete) of the grid.

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Formative Assessment in the Classroom: Sharon Pernisi

Think about your learning...

Circle the number that you feel best matches your level of success with each item.

I can talk and write about plotting points using correct vocabulary.

Not at All 1 2 3 4 5 Absolutely

I can plot points in all four quadrants.

Not at All 1 2 3 4 5 Absolutely

I can create a rule for ordered pairs (x, y) for quadrants I, II, III and IV.

Not at All 1 2 3 4 5 Absolutely

After this lesson, I feel like I need more time learning

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Poll: Yes or No?

☐ Do you think Sharon's formative assessment strategies met the criteria?

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Formative Assessment in the Classroom: Jessica

Big Idea: Use data to draw conclusions.

Learning Goal	Success Criteria	Formative Assessment Strategies
Describe variables that affect standing waves in strings.	Be able to measure cyclical motion using frequency.	Informal skills test using lab equipment to measure frequency. Teacher observes student skills with equipment. Make brief clipboard notes to review later.
	Differentiate between resonating and vibrating in strings.	<i>Question:</i> What would higher frequency look like in the string? <i>Discussion:</i> When is the vibrating string resonating? Demo at 1 st , 2 nd , 3 rd harmony and between harmonic frequencies. How will you know when it is resonating?
	Brainstorm variables that affect fundamental frequency of strings.	<i>Demo:</i> How do I change the note a guitar will play? How is the string different when it plays a different note?
	Design tests for those variables.	<i>Question:</i> How will you control variables? Test one variable with equipment. Check student designs for controlling variables and testing intended variable
	Draw conclusions from test data.	Write conclusion statement that is supported by data.

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Poll: Yes or No?

☐ Do you think Jessica's formative assessment strategies met the criteria?

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Formative Assessment in the Classroom: Deb

Big Idea: Colors have value and intensity

Learning Goal	Success Criteria	Formative Assessment Strategies
Understand how colors are affected by adding black and white to create shades and tints.	Create different tints and shades of the same color and explain why the color changes.	Entrance ticket: describe what impact you expect adding black to blue, yellow and red will have. Describe what impact you expect adding white will have. Review responses as students begin experimenting. Individual experimentation - paint colors to create shades and tints. Questioning – what did you do to make this shade/tint? What do you think would happen if you added white to this color? Why? What do you think would happen if you added black? Why?
Understand how artists use tints and shades to create various effects in their work.	Explain how artists have used tints and shades in their work.	In small groups, discuss 3 pictures from different artists. How has the artist used tints and shades? What kind of effects have they created? Teacher observation of discussions – intervene to scaffold Group presentations to the class – peer feedback.
Use accurate vocabulary.	When you are explaining why color changes, or how an artist used tints and shades, include accurate vocabulary in your explanation.	Listen for vocabulary use in all of the above.

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Poll: Yes or No?

- ☐ Do you think Deb's formative assessment strategies met the criteria?

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Poll: Check Your Learning

On a scale of 1-5 rate the degree to which you think you have met today's success criteria (1 is not at all – 5 is to a great extent):

- ☐ *I can explain (to a colleague) the criteria for determining assessment quality in formative assessment*
- ☐ *I can evaluate the quality of formative assessment strategies*
- ☐ *I can select appropriate formative assessment strategies to elicit evidence of learning during a lesson*

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First Two Stages of Implementation

Based on Fixsen et al. (2007)

EXPLORATION	INSTALLATION
<i>Identifying the need for an intervention Acquiring information via interactions with one another</i>	<i>Active preparation for doing things differently</i>
<p>Participates in professional development</p> <p>Develops new pictures of practice (i.e. has a conception of formative assessment and is able to articulate how FA practice in differs from "what I am doing already."</p> <p>Is undecided about where to start/what to develop skill in first.</p> <p>Based on experience, when teachers first learn about FA, they say "I am doing that already." In the exploration stage they should become more reflective and able to articulate points of convergence with their practice and what they are learning about and points of divergence.</p>	<p>Tries out one or more components of full implementation</p> <p>Does not use component consistently</p> <p>Is only able to focus on individual components of the formative assessment process, rather than implementing them as a whole to support learning.</p>

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Next Steps

- What we are learning today is.....
- What I will ask you to do so that I can check on your learning is.....

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Next Steps

- How has what you have learned so far in this course changed your thinking about formative assessment?
- How will that change your classroom practice or your role in supporting teachers.

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